

Appl. No.: 10/087,484
Amdt. Dated: July 15, 2004
Reply to Office Action of: April 30, 2004

REMARKS/ARGUMENTS

Claims 1-26 have been cancelled. New claims 27-40 have been added which applicant believes more clearly and concisely state and define the invention and what is being claimed. New claims are submitted because applicant believes that amending the existing claims would have been confusing due to the extensiveness of the amendments.

1. Drawings

The Examiner has indicated in the accompanying form PTO-326 that the formal drawings previously submitted have been approved.

2. § 112 Rejections

The Examiner has rejected claims 1-26 under 35 U.S.C. § 112, second paragraph, as being indefinite for failing to particularly point out or distinctly claim the invention. Claim 1-26 have been cancelled and claims 27-40 are submitted. Applicant believes that the new claims overcome the § 112, second paragraph, indefiniteness rejections.

Claim 16 was rejected under § 112, first paragraph.

Applicant submits that the § 112 rejection are moot in view of the cancellation of the original claims and the submission of the amended claims. The new claims are directed to a method for producing a ≥ 4 kilohertz repetition rate excimer laser having a ≥ 4 kilohertz laser beam and a second laser beam suitable for annealing optical components of the laser, said method including the use of barium fluoride in at least one laser window. The second laser beam can be operated before, during or after operation of the first laser beam.

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3. § 102 Rejections

The Examiner has rejected claims 4 and 16 under 35 U.S.C. § 102(b) as being anticipated by Tsuboi, et al (JP406250015A). Applicant submits that this rejection is moot in view of the amended claims.

However, applicant also submits that Tsuboi does not anticipate the claimed invention in any aspect, in either the new claims or the original claims, because Tsuboi requires the use of a dielectric multilayer film (coating) on a base body selected from among the fluorides of calcium, barium, etc. (See Tsuboi, section titles CONSTITUTION, line 4 *et seq.* Applicant's invention does not use a dielectric multilayer film. Consequently, applicant submits that Tsuboi does not anticipate the claimed invention.

4. § 103 Rejections

The Examiner has rejected claims 1-5, 7-12, 14-18 and 20-26 under 35 U.S.C. § 103(a) as being unpatentable for obviousness over Tsuboi, et al (JP406250015A) as applied above in light of Das, et al (U.S. Patent No. 5,978,409), Mizugaki, et al (US Patent No. 6,146,456) and Mihashi, et al, (JP4112288898A).

A. Tsuboi

First, as applicant has stated above, Tsuboi teaches the use of optical elements having a dielectric multilayer coating. Applicant's invention does not teach or suggest the use of such coating. In a reverse manner, Tsuboi does not teach or suggest that in his invention the multilayer coating can be omitted. THEREFORE, in view of these facts, applicant submits that Tsuboi does not teach or suggest the claimed invention.

B. Das

Das is cited in combination with Tsuboi, and in particular Das is cited as disclosing an oscillating laser beam which exits, a grating based narrowing apparatus having a prism beam expander with at least four prism, and other items as set for in the Office Action.

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Applicant submits that Das does not teach elements of the claimed invention. For example, Das teaches using Al_2O_3 coated elements. In contrast to Das, the claimed invention does not teach or require the use of coated elements. One of the reasons for coating an optical material is to prevent damage to the element. In the claimed invention annealing by the second laser cures absorption effects caused by the primary laser.

Therefore, applicant submits that Das, either alone or in combination with Tsuboi, does not teach or suggest the claimed invention.

C. Mizugaki *et al.*

Mizugaki *et al.* ("Mizugaki") is cited by the Examiner as disclosing a method of annealing and manufacturing a single crystal of fluoride suitable for use in various devices that utilize a laser operating in the ultraviolet or vacuum ultraviolet wavelength regions. In addition, the Examiner states that Mizugaki also discloses that the reference invention (of Mazaguki) is suitable for an optical system with a wavelength of 250 nm or less. The Examiner then concludes that it would be obvious to one of ordinary skill in the art that: "...to anneal the barium fluoride crystal window(s) of Tsuboi et al (JP406250015A) one would be motivated to substitute one or both of the barium fluoride crystal window(s) of Tsuboi et al (JP406250015A) for those of Mizugaki ('456). Applicant device is obvious.

Applicant submits that Mizugaki ('456) does not teach the claimed invention or device. What Mizugaki does teach is annealing a metal fluoride crystal in an insulated annealing furnace having a plurality of heaters and using a controlled rate of cooling. The Mizugaki invention is best summarized by claim 1 of the '456 patent. This method is well known in the art, Mizugaki does not teach or suggest annealing in situ by use of a secondary laser beam to cure absorption effects caused by the primary laser beam.

Therefore, applicant submits that Mizugaki, alone or in combination with Tsuboi and/or Das, does not teach or suggest the claimed invention.

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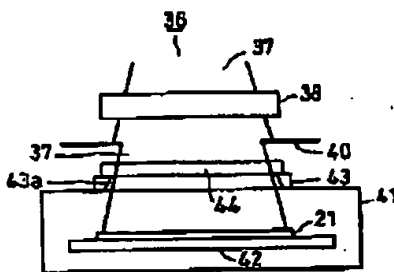
D. Mihashi *et al.*, JP 11-288898A

The Mihashi reference does not teach or suggest a device having two laser beams and using the secondary beam to anneal optical elements. What Mihashi does teach is using an excimer laser, expanding the beam projected by the laser, and impinging the expanded beam on a material to form a pattern. In fact, applicant believes that the word "annealing" is being misused. The beam from this laser is being used to form an image on a substrate, but anneal the substrate as that term is used with regard to annealing optical fluoride single crystals.,

A machine translation of JP 11-288898A is attached. Referring to the following Paragraph [0020] and Drawing 2, below:

"[0020] Next, in order to obtain the semi-conductor layer 23 of polycrystalline silicon on the 1st insulating substrate 21, the excimer laser annealer which carries out laser annealing of the amorphous silicon is described. Drawing 2 is the outline block diagram which looked at the excimer laser annealer 36 from [of the excimer laser beam 37] the major axis. The excimer laser annealer 36 carries out image formation of the excimer laser beam 37 which emits light from the light source (not shown) with the image formation lens 38, cuts both ends to the long slit 40, and is irradiated on the stage 42 which carries out scan migration within the annealing chamber 41 in the direction perpendicular to the direction of a major axis of the excimer laser beam 37." [Emphasis added]

Drawing 2



Paragraph [0020] and Drawing 2 clearly indicates that image formation is taking place, not annealing.

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Therefore, applicant submits that Mihashi, taken alone and/or in combination with one or all of Tsuboi, Das and Mizugaki, does not teach or suggest the claimed invention.

Consequently, in view of the arguments and fact set forth above with regard to Mihashi, taken alone and/or in combination with one or all of Tsuboi, Das and Mizugaki, does not teach or suggest the invention as claimed in the amended claims.

E. Kawahara *et al.*, JP 9-40499

The Examiner states that Kawahara *et al.* is cited for its teaching of laser annealing. However, what Kawahara does not teach or suggest is an excimer laser having two beams, the second of one of which can be used for annealing before, during and after operation of the first or primary laser beam. Consequently, applicant submits that the invention as claimed in the amended claims submitted herewith is patentable over Kawahara.

5. Conclusion

Based upon the above amendments, remarks, and papers of records, applicant believes the pending amended claims of the above-captioned application are patentable over the cited art and are in allowable form. Applicant respectfully requests that a timely Notice of Allowance be issued in this case.

Applicant believes that no extension of time is necessary to make this Reply timely. Should applicant be in error, applicant respectfully requests that the Office grant such time extension pursuant to 37 C.F.R. § 1.136(a) as necessary to make this Reply timely, and hereby authorizes the Office to charge any necessary fee or surcharge with respect to said time extension to the deposit account of the undersigned firm of attorneys, Deposit Account 03-3325.

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Please direct any questions or comments to Walter M. Douglas at 607-974-2431.
If there is any matter whose speedy resolution can be resolved by a telephone conversation and possible an examiner's amendment, the Examiner is invited to call applicants attorney.

15 July 2004
Date

<p>CERTIFICATE OF TRANSMISSION UNDER 37 C.F.R. § 1.8</p> <p>I hereby certify that this paper and any papers referred to herein are being transmitted by facsimile to the U.S. Patent and Trademark Office at 703-872-9306 on:</p> <p><u>15 July 2004</u> Date</p> <p><u>Walter M. Douglas</u> Walter M. Douglas</p> <p><u>15 July 2004</u> Date</p>

Respectfully submitted,
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